Remarks

This amendment after final rejection is proper under 37 CFR §1.116 and should be entered because it puts claims in condition for allowance or in better form for consideration on appeal, should appeal be necessary.

Claim Rejections – 35 USC § 102

Claims 1-6, 8, 10, 12, 13, 19, 20 stand finally rejected under 35 USC §102(b) for allegedly being anticipated by EP 632 087. This rejection is hereby traversed.

Claims 1 and 10 are amended herein to include the features of claims 7 and 11, respectively. Claims 7 and 11 are accordingly cancelled herein without prejudice to or disclaimer of the subject matter therein. The rejection of claims 1 and 2-6 and 8 dependant therefrom and claims 10 and 12-29 dependant therefrom under 35 USC §102(b) is therefore overcome. Reconsideration and withdrawal of the rejection of claims 1-6, 8, 10, 12, 13, 19, 20 under 35 USC §102(b) over EP 632 087 are thus earnestly solicited.

Claims 1-6, 10, 12, and 13 stand finally rejected under 35 USC §102(b) for allegedly being anticipated by EP 488 389. This rejection is hereby traversed.

The amendment to claims 1 and 10 by adding the features of claims 7 and 11 respectively and the subsequent cancellation of claims 7 and 11 overcomes this rejection as well. Reconsideration and withdrawal of the rejection of claims 1-6, 10, 12, and 13 under 35 USC §102(b) over EP 488 389 are thus earnestly solicited.

Claim Rejections – 35 USC § 103

Claims 1-7, 11, 14-18, 21-25 stand finally rejected under 35 USC §103 for allegedly being unpatentable over EP 632 087 in view of EP 630 736. This rejection is hereby traversed.

The final Office Action dismisses Applicants' earlier arguments that EP 632 087 disclose a prepreg as opposed to the present claims which are directed to preforms, relying on a

definition (from an unidentified source) for "preform." Specifically, the Office Action contends that the materials disclosed in EP 632 087 meet both the first and fourth numbered definitions set forth therein and would therefore be "preforms". However, the structural component of the present invention component is a preform for liquid composite molding and as such comprises dry structural fibers and a toughening additive comprising non structural thermoplastic fibers.

Prepregs, as disclosed in EP '087, do not present the same processing challenges as preforms. Prepregs are generally flat, planar fiber reinforced structures that are pre-impregnated with a resin. While prepregs can suffer from handling problems such as non-drapability and limited shelf life, they are generally cured under vacuum with heat and/or pressure to ensure full impregnation of the resin during cure. Preforms, on the other hand are tailored or shaped as necessary and assembled prior to being placed into or on a mold tool. These preforms made of dry fibers are placed in the mold are then injected or infused with liquid resin and then cured. Such liquid composite molding technologies are thought to be the solution to the problem of making composite parts in a number of intractable situations, such as large aerospace primary structures and high volume structural automotive components. The benefits that liquid composite molding technologies are perceived to offer over conventional prepregs are reduced scrap and lay-up time, non-dependence upon drape and increased shelf life properties. However, liquid composite molding does have its own problems, particularly when the end use applications require high toughness and where control of curing cycle time is critical. The solution to introducing toughness in an aerospace composite has traditionally been to toughen the matrix – usually by introducing a second phase additive such as a thermoplastic polymer to the base epoxy resin matrix. This approach, however, is limited by the level of thermoplastic that can be added to enhance toughness. As the high molecular weight thermoplastic dissolves into the resin, the viscosity of the blend rises steeply. The nature of the process of introducing by injection of the resin into the reinforcing fibers of the preform requires

that resin properties such as viscosity and elasticity are such as to allow infiltration of the resin throughout the fabric preform. This is essential if the resulting composite structure is to be free of voids and long injection time and high injection temperatures are to be avoided. The present invention addresses this problem by removing the toughening agent from the resin and putting it in the structural reinforcement of the composite as a fiber. The less viscous resin is then more easily injected into the preform prior to curing.

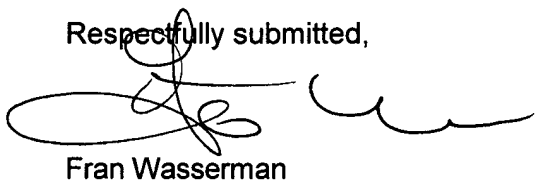
Hence, the present invention by incorporating the toughening additive as part of the preform instead of as part of the injectable resin, allows easier injection of the resin therein during the liquid composite molding. In direct contrast, the prepregs as disclosed in EP 632 087 are unquestionably pre-impregnated with resin. Therefore since there is no need to inject any resin into the prepregs immediately prior to curing, the prepregs of EP-087 could not be subject to the same problems of injecting resin into a dry preform to which the present invention addresses and solves. EP 630 736 discloses a co-spun fiber reinforcement with matrix resin wherein the matrix resin is incorporated therein as a yarn, rather than a liquid, EP'736 therefore does not overcome the deficiencies of EP '087. The present invention therefore would not have been obvious over EP '087 in view of EP '736. Reconsideration and withdrawal of the 35 USC §103 rejection of claims 1-7, 11, 14-18, 21-25 for allegedly being unpatentable over EP 632 087 in view of EP 630 736 are thus earnestly solicited.

Claims 26-29

It is noted that although the Office Action recognized claims 26-29 as pending, there is no rejection/objection thereto (or indication of allowability) set forth therein. Clarification on this matter is therefore respectfully requested.

In view of the foregoing, this application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-6 and 8 and 10, and 11-29 are thus earnestly solicited. Should the Examiner not yet consider these claims in condition for allowance, she is requested to telephone the undersigned before taking further action.

Respectfully submitted,



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